

REMARKS

Claims 1, 15 and 22 are amended herein. Claims 1-28 remain pending in the application.

Claims 1-3, 8, 9, 14, 22-24, 27 and 28 over Park in view of AAPA

In the Office Action, claims 1-3, 8, 9, 14, 22-24, 27 and 28 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park, U.S. Patent No. 5,502,217 ("Park") in view of Applicants' Admitted Prior Art ("AAPA"). The Applicants respectfully traverse the rejection.

Claims 1-3, 8, 9, 14, 22-24, 27 and 28 recite, *inter alia*, an apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**.

Park appears to disclose echo time cancellation determined in a full duplex system by providing an echo time determiner which samples signals on either a transmit path or a receive path (Abstract). The determiner may be used for electrical cancellation, i.e., coupled to the receive path (Park, col. 3, lines 57-59). Conversely, the determiner may be used for acoustic echoes only, a sampler would receive inputs from the transmit path (Park, col. 3, lines 59-61). An acoustic echo canceller is connected to a speakerphone system within a teleconferencing system hardwired to a PSTN (Park, col. 1, lines 12-24). The hybrid echo canceler is connected to a telephone line interface within the teleconferencing system (Park, col. 1, lines 29-38). An echo canceler determiner determines the amount of echo to suppress in one or both of a transmit path and a receive path, i.e., used for electrical cancellations as input from a receive path and acoustic echoes as input from a transmit path (Park, col. 3, lines 51-61).

Park discloses an echo canceler determiner that is configurable for use in one or both of a transmit path and a receive path canceling electrical cancellations in an input path and acoustic echoes in a transmit path. However, in either configuration the echo canceler determiner is configured for use in a **single device**, **NOT** in a **first device** and a **second device**, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

Moreover, Park's echo canceler determiner is used in a wired speakerphone system (Fig. 3), **NOT** a wireless device, much less a first wireless device and a second wireless device, as recited by 1-3, 8, 9, 14, 22-24, 27 and 28.

Moreover, Park's configurable echo canceler utilizes at least two connections, i.e., a first connection connected to at least one microphone and a second connection connected to at least one speaker. Park fails to disclose or suggest an echo canceler module that is configurable to operate through a common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

The Office Action correctly acknowledged that Park fails to disclose an echo canceler that operates as an acoustic echo canceler and a hybrid echo canceler through a common connection (Office Action, page 4). However, the Office Action relies on AAPA to allegedly make up for the deficiencies in Park to arrive at the claimed invention.

The Examiner relies on AAPA to disclose an echo canceler that operates as an acoustic echo canceler and a hybrid echo canceler through a common connection, i.e., allegedly a telephone line (Office Action, page 4). However, in a conventional cordless telephone **only** the hybrid echo canceler is connected to the telephone line, **NOT** the acoustic echo canceler and the hybrid echo canceler as alleged by the Examiner. The acoustic echo canceler is connected only to the handset microphone, **NOT** to a telephone line, as alleged by the Examiner.

Moreover, the Examiner relies on AAPA to disclose an echo canceler that operates as an acoustic echo canceler and a hybrid echo canceler through a common connection, i.e., allegedly a telephone line. Even Park discloses a system utilizing two types of echo cancellation, the system being connected to a telephone line. However, as with AAPA, Park discloses an echo canceler that utilizes two connections, one for acoustic echo cancellation and one for hybrid echo cancellation. Neither Park nor AAPA disclose or suggest an apparatus utilizing an echo canceler module configurable to operate through a

common connection as an acoustic echo canceler and as a hybrid echo canceler, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

AAPA discloses a cordless telephone that has a dedicated design acoustic echo canceler for use in a handset and a dedicated design hybrid echo canceler for use in a base unit, both part of a cordless telephone system (Fig. 6; page 3, line 11-page 4, line 6). However, the dedicated acoustic echo canceler uses a dedicated connection to a handset and the dedicated hybrid echo canceler uses a dedicated connection to a base unit.

AAPA discloses an acoustic echo canceler that is a dedicated design to a handset and a hybrid echo canceler that is dedicated design to a base unit. Alternately, AAPA discloses that, in the event of a combined requirement of both an acoustic echo canceler and a hybrid echo canceler within the same unit, i.e., Park, manufacturers typically customize a combined hybrid echo canceler and acoustic echo canceler for use with the particular application, i.e., Park.

AAPA fails to disclose or suggest a configurable echo canceler module for use in two devices, much less in a first wireless device and a second wireless device, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

Moreover, AAPA utilizes two connections, i.e., an acoustic echo canceler connect to a handset and a hybrid echo canceler connect to a base unit first connection connected to at least one microphone and a second connection connected to at least one speaker. Park fails to disclose or suggest an acoustic echo canceler and a hybrid echo canceler that adaptively connect to a first wireless device and a second wireless device through a common connection, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

Moreover, modifying Park with AAPA is non-sensical. Park's invention is directed toward a speakerphone system. AAPA discloses a cordless telephone system. Even if the theoretical combination of Park and AAPA were obvious (which it is not), at best the theoretical combination would result in the speakerphone being modified with components from a cordless telephone system. The resulting speakerphone may not even operate, much less operate

as a speakerphone since the echo canceler from AAPA is not intended to operate in a speakerphone.

Neither Park nor AAPA, either alone or in combination, disclose, teach **or suggest** an apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**, as recited by claims 1-3, 8, 9, 14, 22-24, 27 and 28.

Having an echo canceler that is **configurable** for use in a **first** and **second** wireless device allows a manufacturer to, e.g., minimize production costs. Conventionally, two production units are produced by manufacturers for requirements in a plurality of devices using **either** an acoustic echo canceler and a hybrid echo canceler. Applicants' invention allows a single unit to be produced for both applications, with the single unit being **configurable** for its intended application. Production of a single unit that is versatile enough to be used in more than one application potentially reduces production costs. None of the cited references disclose or suggest such a benefit. Although Park discloses a configurable echo canceler, its possible configurations are still used in a **single wired** device through **two connections**.

Accordingly, for at least all the above reasons, claims 1-3, 8, 9, 14, 22-24, 27 and 28 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 6, 7 and 15-26 over Park in view of AAPA and Iyengar

In the Office Action, claims 6, 7 and 15-26 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Iyengar, U.S. Patent No. 5,663,955 ("Iyengar"). The Applicants respectfully traverse the rejection.

Claims 6, 7, 23 and 24 are dependent on claim 1, and are allowable for at least the same reasons as claim 1.

Claims 6, 7 and 15-26 recite, *inter alia*, a method and apparatus utilizing an echo canceler module that is configurable to operate through a

common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device.

As discussed above, neither Park nor AAPA, either alone or in combination, disclose, teach or suggest a method and apparatus utilizing an echo canceler module that is configurable to operate through a common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device, as recited by claims 6, 7 and 15-26.

The Office Action relies on Iyengar to allegedly make up for the deficiencies in Park in view of AAPA to arrive at the recited invention. The Applicants respectfully disagree.

Iyengar appears to disclose an echo canceler system that includes first and second echo cancelers (Abstract). In a loudspeaker telephone set with full-duplex operation, an acoustic path arises between a loudspeaker and a microphone, and a line echo path arises at a hybrid transformer which connects a set's four-wire system to a two-wire local customer loop (Iyengar, col. 3, lines 30-34). A first echo canceler is used for canceling a line echo, and a second echo canceler is used for canceling acoustic echo (Iyengar, col. 3, lines 34-36).

Iyengar discloses application of an echo canceler system that includes first and second echo cancelers for a loudspeaker telephone set. A loudspeaker telephone set, i.e., a single device, that uses two echo cancellers, i.e., first and second echo cancellers utilized in a single device is **NOT** a method and apparatus utilizing an echo canceler module that is configurable to operate through a common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device, as recited by claims 6, 7 and 15-26.

Neither Park, AAPA nor Iyengar, either alone or in combination, disclose, teach or suggest a method and apparatus utilizing an echo canceler module that is configurable to operate through a common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device, as recited by claims 6, 7 and 15-26.

Accordingly, for at least all the above reasons, claims 6, 7 and 15-26 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 12, 13 and 21 over Park in view of AAPA, Iyengar, Velardo and Danstrom

In the Office Action, claims 12 and 13 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Velardo et al., U.S. Patent No. 5,587,998 ("Velardo"), and still further in view of Danstrom, U.S. Patent No. 4,582,963 ("Danstrom"), with claim 21 rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, Iyengar, Velardo and Danstrom. The Applicants respectfully traverse the rejection.

Claims 12, 13 and 21 are dependent on claims 1 and 15 respectively, and are allowable for at least the same reasons as claims 1 and 15.

Claims 12, 13 and 21 recite, *inter alia*, a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**.

As discussed above, Park in view of AAPA and Iyengar fails to disclose **or suggest** a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**, as recited by claims 12, 13 and 21.

The Office Action relies on Velardo and Danstrom to allegedly make up for the deficiencies in Park, AAPA and Iyengar to arrive at the recited invention. The Applicants respectfully disagree.

Velardo appears to disclose a method and apparatus for reducing, in a communication signals received by a local network from a remote network, energy content attributable to echoes of signals transmitted into a local network (Velardo, Abstract). Selective regulation of individual frequency sub-bands leads to higher operational stability and better voice quality than are achieved using

conventional, fullband nonlinear processors for reducing echo (Velardo, col. 5, lines 18-22).

Danstrom appears to disclose a telephone echo canceling circuit employing a digital transversal filter which adapts to incorporate an impulse response (Abstract). The initial zero response created by transmission delays are ignored through the use of a memory that holds signal samples for this period (Danstrom, col. 2, lines 16-47).

Velardo discloses selective regulation of individual frequency sub-bands. Selective frequency regulation is **NOT** a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**, as recited by claims 12, 13 and 21.

Danstrom discloses an echo canceling circuit that is able to ignore an initial zero response. Danstrom fails to disclose an echo canceler that connects to **two** devices, much less a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**, as recited by claims 12, 13 and 21.

Neither Park, AAPA, Iyengar, Velardo nor Danstrom, either alone or in combination, disclose, teach or suggest a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**, as recited by claims 12, 13 and 21.

Accordingly, for at least all the above reasons, claims 12, 13 and 21 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Claims 4, 5, 10, 11, 17 and 20 over Park in view of AAPA, Iyengar, Velardo and Sih

In the Office Action, claims 4 and 5 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Sih, U.S. Patent No. 5,687,229 (“Sih”). Claims 10 and 11 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Velardo and Sih. Claim 17 was rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Iyengar and Sih. Claim 20 was rejected under 35 U.S.C. §103(a) as allegedly being obvious over Park in view of AAPA, and further in view of Iyengar and Sih.

Claims 4, 5, 10, 11, 17 and 20 are dependent on claims 1 and 15 respectively, and are allowable for at least the same reasons as claims 1 and 15.

Claims 4, 5, 10, 11, 17 and 20 recite, *inter alia*, a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**.

As discussed above, neither Park, AAPA, Iyengar and Velardo, either alone or in combination, disclose, teach or suggest a method and apparatus utilizing an echo canceler module that is configurable to operate through a **common connection** as an acoustic echo canceler in a **first wireless device** and as a hybrid echo canceler in a **second wireless device**, as recited by claims 4, 5, 10, 11, 17 and 20.

The Office Action relies on Sih to allegedly make up for the deficiencies in Park, AAPA, Iyengar and Velardo to arrive at the recited invention. The Applicants respectfully disagree.

Sih appears to disclose a method of controlling echo canceling in an echo cancelation system using a state machine controller (Abstract). The echo canceler includes a state machine which is configured into a predetermined state of a plurality of states depending on presence of a near-end speech signal, a far-end speech signal, or both a near-end and a far-end speech signals (Sih, Abstract). Based on a predetermined state of the state machine, the controller in

the state machine controls the update of coefficients of a plurality of adaptive filters (Sih, Abstract). To preserve echo filter coefficients of a echo canceler filter, a variable adaptation threshold is used to switch on and off adaptation of the echo canceler filter (Sih, col. 13, lines 29-32).

Sih discloses an echo canceler using a plurality of adaptive filters. An echo canceler using adaptive filters is **NOT** a method and apparatus utilizing an echo canceler module that is configurable to operate through a common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device, as recited by claims 4, 5, 10, 11, 17 and 20.


Neither Park, AAPA, Iyengar, Velardo nor Sih, either alone or in combination, disclose, teach or suggest a method and apparatus utilizing an echo canceler module that is configurable to operate through a common connection as an acoustic echo canceler in a first wireless device and as a hybrid echo canceler in a second wireless device, as recited by claims 4, 5, 10, 11, 17 and 20.

Accordingly, for at least all the above reasons, claims 4, 5, 10, 11, 17 and 20 are patentable over the prior art of record. It is therefore respectfully requested that the rejection be withdrawn.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,



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